

1 Patent claims

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3 1. A method for determination of a load characteristic (K_1),
4 which indicates the load level on an electrical primary
5 component (2) in an electrical power distribution network, in
6 which method the following steps are carried out:

- 7 - description values (\tilde{M}) which describe an operating state
8 of the primary component are recorded by means of a sensor
9 (3) which is connected to a field appliance (5) which
10 carries out functions relating to the automation of the
11 power distribution network,
12 - an overall sum of the description values (\tilde{M}) is
13 determined over the duration of at least one
14 predetermined time interval in order to form a load
15 intermediate value (K^*), and
16 - the load characteristic (K_1) is produced as a function of
17 the magnitude of the load intermediate value (K^*) in
18 comparison to a predetermined load limit value.

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20 2. The method as claimed in claim 1,
21 characterized in that

- 22 - the load characteristic (K_1) is emitted from the field
23 appliance 5 or from a data processing device (10) which is
24 connected to the field appliance (5).

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26 3. The method as claimed in claim 1 or 2,
27 characterized in that

- 28 - a load signal (W_1) is produced and emitted from the field
29 appliance (5) or from a data processing device (10) which
30 is connected to the field appliance (5), as a function of
31 the magnitude of the load characteristic (K_1), when the
32 load characteristic (K_1) indicates that the load on the
33 primary component (2) is particularly low and/or
34 particularly high.

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- 1 4. The method as claimed in one of the preceding claims,
2 characterized in that
 - 3 - a sensor which is already present in an automation system
4 is also used to record the description values (\tilde{M}) .
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- 6 5. The method as claimed in one of the preceding claims,
7 characterized in that
 - 8 - measured values of a primary measurement variable are used
9 as description values (\tilde{M}) .
10
- 11 6. The method as claimed in claim 5,
12 characterized in that
 - 13 - a current which is flowing through the primary component
14 (2) is used as the primary measurement variable.
15
- 16 7. The method as claimed in claim 5,
17 characterized in that
 - 18 - a voltage which is applied to the primary component (2) is
19 used as the primary measurement variable.
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- 21 8. The method as claimed in claim 5,
22 characterized in that
 - 23 - a temperature of the primary component (2) is used as the
24 primary measurement variable.
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- 26 9. The method as claimed in one of the preceding claims,
27 characterized in that
 - 28 - the load characteristic (K_1) is produced repeatedly, and
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1 - successive load intermediate values (K^*) are added in a
2 sum memory (13) in order to form an aging characteristic
3 (K_2).
4

5 10. The method as claimed in claim 9,
6 characterized in that

7 - the aging characteristic (K_2) is emitted from the field
8 appliance (5) or from a data processing device (10) which
9 is connected to the field appliance (5).
10

11 11. The method as claimed in claim 9 or 10,
12 characterized in that

13 - an aging signal (W_2) is produced as a function of the
14 magnitude of the aging characteristic (K_2) in comparison
15 to a predetermined aging limit value for the field
16 appliance (5) or a data processing device (10) which is
17 connected to the field appliance (5), and
18 - the aging signal (W_2) is emitted from the field appliance
19 (5) or the data processing device (10).
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21 12. The method as claimed in one of claims 9 to 11,
22 characterized in that

23 - the sum memory (13) is set to the value zero on starting
24 up the primary component (2).
25

26 13. The method as claimed in one of claims 9 to 11,
27 characterized in that

28 - the sum memory (13) is set to a start value, which takes
29 account of previous use of the primary component (2), on
30 starting up the primary component (2).
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32 14. The method as claimed in one of the preceding claims,
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- 1 characterized in that
- 2 - if the primary component is a circuit breaker (2a), the
- 3 description values (\tilde{M}) are in each case determined only
- 4 while the switching contacts of the circuit breaker (2a)
- 5 are open.
- 6
- 7 15. The method as claimed in one of the preceding claims,
- 8 characterized in that
- 9 - if the primary component is a circuit breaker (2a), the
- 10 number of switching processes carried out by the circuit
- 11 breaker (2a) is also determined by the field appliance
- 12 (5),
- 13 - an aging switching value (A) is determined from this
- 14 number of switching processes, and
- 15 - the aging switching value (A) or a warning message derived
- 16 from it is emitted from the field appliance (5) or from a
- 17 data processing device (10) which is connected to the
- 18 field appliance (5).

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